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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,225	04/08/2004	J. Yong Ryu	CDT 1857	9399
1338	7590	12/21/2005	EXAMINER	
KENNETH H. JOHNSON			CHU, YONG LIANG	
P.O. BOX 630708			ART UNIT	
HOUSTON, TX 77263			PAPER NUMBER	
			1626	
DATE MAILED: 12/21/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/821,225	<b>Applicant(s)</b> RYU ET AL.	
	<b>Examiner</b> Yong Chu	<b>Art Unit</b> 1626	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Nov-15-2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) 4-9 is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4,7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/9/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Claims 1-20 are pending in this application.

#### ***Information Disclosure Statement***

Applicant's Information Disclosure Statements, filed on 09 July 2004, have been considered. Please refer to Applicant's copies of the PTO-1449 submitted herewith.

#### ***Priority***

This application claims the benefit of U.S. Provisional Application 60/552,838 filed on 12 March 2004.

#### ***Election/Restrictions***

***Restriction to one of the following Groups is required under 35 U.S.C. 121:***

- I. Claims 1-9 are drawn to a process for the production of dialkyl carbonate, classified in various subclasses of class 558.
- II. Claim 10 is drawn to a process for the production of dimethyl carbonate, classified in various subclasses of class 558.
- III. Claims 11-20 are drawn to a process for the production of dialkyl carbonate, classified in various subclasses of class 558.

***The above groups represent general areas wherein the inventions are independent and distinct, each from the other because of the following reasons:***

Inventions I, II and III are distinct processes of making. Inventions are distinct if it can be shown that they are not disclosed as capable of use together and they have

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different modes of operation, different functions, or different effects (MPEP §806.04, MPEP §808.1). In the instant case, the different inventions cannot be used together as each process uses different starting materials, reagents, reaction conditions such as reaction temperature and reaction container, etc...

In addition, because of the plethora of classes and subclasses in each of the Groups, a serious burden is imposed on the examiner to perform a complete search of the defined areas. Therefore, because of the reasons given above, the restriction set forth is proper and not to restrict would impose a serious burden in the examination of this application.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Response to Restriction***

During a telephone conversation with Applicants' representative, Ken H. Johnson, 15 November 2005, an election made ***without*** traverse to ***Group I***, claims 1-9, is acknowledged.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

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remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Status of the Claims***

Claims 1-20 are pending in this application. Claims 10-20 are withdrawn from further consideration by the Examiner, 37 C.F.R. § 1.142(b), as being drawn to a non-elected invention. The withdrawn subject matter is patentably distinct from the elected subject matter as it differs in structure and element and will require separate search considerations. In addition, a reference, which anticipates one group, would not render obvious the other.

### ***Specification***

The first paragraph of the specification does not contain continuing data (e.g. provisional application) to which the instant specification claims benefit from.

Applicants are reminded that the Equation (4) on page 7 line 16 is not correct. The structure of alkyl carbamate is mis-represented. Appropriate correction is required.

### ***Claim Objections***

Claim 4(h) is objected to because of the following informalities: Improper use of "said", due to lack of antecedent basis of "second distillation column reactor".

Claim 4(b)(ii) is objected to because of the following informalities: Typo of "carbon monoxide". Instead, carbon dioxide should be used.

Claim 7 is objected to because of the following informalities: Improper use of "said", due to lack of antecedent basis of "second distillation column reactor".

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. *Determining the scope and contents of the prior art.*
2. *Ascertaining the differences between the prior art and the claims at issue.*
3. *Resolving the level of ordinary skill in the pertinent art.*
4. *Considering objective evidence present in the application indicating obviousness or nonobviousness.*

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ryu et al., U.S. Pat. Num. 6392078 in view of Blount U.S. Pat. Num. 5,788,915, Guadalupi et al. South African Pat. Num. ZA 6804613 (1968), Mizukami et al. U.S. Pat. Num. 6031122, and Saleh, et al. WO 95/17369.

***Determination of the scope and content of the prior art (MPEP § 2141.01)***

Ryu et al. disclose a process for the production of dialkyl carbonate comprising the steps of reacting urea with a primary alcohol in the presence of organotin compound of dialkylalkoxide in a reaction zone, and removing the said dialkyl carbonate and other chemicals from the reaction zone as vapor, and separating dialkyl carbonate from the said vapor by contacting diethyl oxalate (DEOX) under disclosed condition. Blount

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discloses a process of making ammonium carbamate by reacting water with urea at 120-160 °C. Guadalupi et al. disclose a process for removing contaminating amount of ammonium carbamate from urea by decomposing ammonium carbamate into ammonia and carbon dioxide and removing the resulting NH<sub>3</sub> and CO<sub>2</sub> as vapor from the product, urea. Mizukami et al. disclose a process for production of dialkyl carbonate comprising the step of facilitating exhaustion of produced ammonia by adding properly alcohol and maintaining a boiling point of the reaction liquid to a suitable temperature. Saleh et al. disclose a process for making alkyl carbamate by reacting urea with alcohol at a temperature and pressure sufficient to convert urea to an alkyl carbamate without using catalyst.

Ascertainment of the difference between the prior art and the claims (MPEP § 2141.02)

The difference between the prior art of Ryu et al. and the instant claims is that the prior art does not teach removing the impurities of water and ammonium carbamate from the feed of urea and alcohol, and does not teach a process for making alkyl carbamate by reacting urea with alcohol at a temperature and pressure sufficient to convert urea to an alkyl carbamate without using catalyst. Blount teaches a process of making ammonium carbamate by reacting water with urea at 120-160 °C in Example 3, column 9 line 35 of U.S. Pat. Num. 5,788,915. Guadalupi et al. teach a process of removing contaminating amount of ammonium carbamate from urea by decomposing ammonium carbamate into ammonia and carbon dioxide by passing through a heat exchanger, South African Pat. Num. ZA 6804613 (1968). See the abstract of ZA 6804613 from STN search report. Mizukami et al. teach a process to facilitate

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exhaustion of produced ammonia during the process of making dialkyl carbonate by adding properly alcohol and maintaining a boiling point of the reaction liquid to a suitable temperature in column 4 line 50 of U.S. Pat. Num. 6031122. Saleh et al. teach a process for making alkyl carbamate by reacting urea with alcohol at a temperature and pressure sufficient to convert urea to an alkyl carbamate without using catalyst on page 46 line 5.

*Finding of prima facie obviousness - rationale and motivation (MPEP § 2142-2413)*

It would have been obvious to succeed for one having ordinary skill in the art at the time the invention was made to remove impurity water and ammonium carbamate, making alkyl carbamate by reacting urea with alcohol at a temperature and pressure sufficient to convert urea to an alkyl carbamate without using catalyst in the first reaction zone and subsequently feed in the second reaction zone for making dialkylcarbonate by combining the processes disclosed by Ryu et al., Blount, Guadalupi, Mizukami et al. and Saleh et al, because they are related to making dialkyl carbonate.

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.



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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-3 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of Ryu et al. U.S. Patent No. 6,392,078 in view of Blount U.S. Pat. Num. 5,788,915, and Guadalupi et al. South African Pat. Num. ZA 6804613 (1968), and Mizukami et al. US 6031122, and Saleh, et al. WO 95/17369.

*Determination of the scope and content of the prior art (MPEP § 2141.01)*

Ryu et al. disclose a process for the production of dialkyl carbonate comprising the steps of reacting urea with a primary alcohol in the presence of organotin compound of dialkylalkoxide in a reaction zone, and removing the said dialkyl carbonate and other chemicals from the reaction zone as vapor, and separating dialkyl carbonate from the said vapor by contacting diethyl oxalate (DEOX) under disclosed condition. Blount discloses a process of making ammonium carbamate by reacting water with urea at 120-160 °C. Guadalupi et al. disclose a process for removing contaminating amount of ammonium carbamate from urea by decomposing ammonium carbamate into ammonia and carbon dioxide and removing the resulting NH<sub>3</sub> and CO<sub>2</sub> as vapor from the product, urea. Mizukami et al. disclose a process for production of dialkyl carbonate comprising the step of facilitating exhaustion of produced ammonia by adding properly alcohol and maintaining a boiling point of the reaction liquid to a suitable temperature. Saleh et al. disclose a process for making alkyl carbamate by reacting urea with alcohol

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at a temperature and pressure sufficient to convert urea to an alkyl carbamate without using catalyst.

Ascertainment of the difference between the prior art and the claims (MPEP § 2141.02)

The difference between the prior art of Ryu et al. and the instant claims is that the prior art does not teach removing the impurities of water and ammonium carbamate from the feed of urea and alcohol, and does not teach a process for making alkyl carbamate by reacting urea with alcohol at a temperature and pressure sufficient to convert urea to an alkyl carbamate without using catalyst. Blount teaches a process of making ammonium carbamate by reacting water with urea at 120-160 °C in Example 3, column 9 line 35 of U.S. Pat. Num. 5,788,915. Guadalupi et al. teach a process of removing contaminating amount of ammonium carbamate from urea by decomposing ammonium carbamate into ammonia and carbon dioxide by passing through a heat exchanger, South African Pat. Num. ZA 6804613 (1968). See the abstract of ZA 6804613 from STN search report. Mizukami et al. teach a process to facilitate exhaustion of produced ammonia during the process of making dialkyl carbonate by adding properly alcohol and maintaining a boiling point of the reaction liquid to a suitable temperature in column 4 line 50 of U.S. Pat. Num. 6031122. Saleh et al. teach a process for making alkyl carbamate by reacting urea with alcohol at a temperature and pressure sufficient to convert urea to an alkyl carbamate without using catalyst on page 46 line 5.

Finding of prima facie obviousness - rationale and motivation (MPEP § 2142-2413)

It would have been obvious to succeed for one having ordinary skill in the art at the time the invention was made to remove impurity water and ammonium carbamate, making alkyl carbamate by reacting urea with alcohol at a temperature and pressure sufficient to convert urea to an alkyl carbamate without using catalyst in the first reaction zone and subsequently feed in the second reaction zone for making dialkylcarbonate by combining the processes disclosed by Ryu et al., Blount, Guadalupi, Mizukami et al. and Saleh et al, because they are related to making dialkyl carbonate.

### ***Conclusion***

Claims 4-9 are allowed.


### ***Telephone Inquiry***

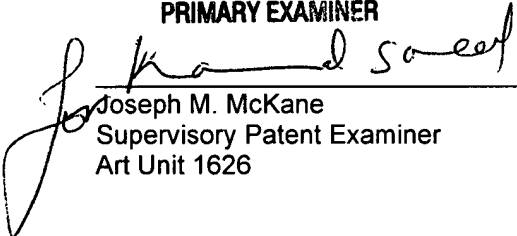
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yong Chu whose telephone number is 571-272-5759. The examiner can normally be reached on 7:00 am - 3:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph McKane can be reached on 571-272-0699. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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